FOOD HABITS, OLD AND NEW

by Hazel K. Stiebeling[1]

THERE are striking examples in various parts of the world of the effects of good and bad food habits on large groups of people. Food habits in the United States have similar effects on the health and the physique of Americans. In general, we are probably ahead of most other countries nutritionally—yet the dietary picture in the United States leaves much to be desired.

THE ABUNDANCE and variety of man's food depend upon his control over environment. For primitive tribes this meant success in hunting and fishing, and discovery and discriminating use of roots, leaves, fruit, and seeds of wild plants. Later, as animals were domesticated and agriculture got under way, control over environment came to mean good management of crops and flocks. Today for a large part of the population, especially for city dwellers, it has an additional meaning—purchasing power, or the ability and the opportunity to produce goods or render services that can be exchanged for the varied products of agriculture, fisheries, and the food industries.

EVOLUTION OF FOOD HABITS

If early man chanced to inhabit a seacoast region, he ate quantities of shellfish and other sea food. If he lived inland where nuts, wild roots, and seed-bearing grasses were abundant, such foods were used. No doubt in all localities birds and their eggs and such other animal foods as were available were eaten. In the Arctic regions, now as in the past, food consists chiefly of animal products, because that is the only kind available in quantity. In the Tropics, where vegetable food is abundant and animal foods spoil quickly, plant products are and always have been of great importance in the diet. In temperate zones many kinds of food are obtainable, and it seems reasonable to suppose that in these regions all classes of food have always been eaten as they are today.

Race experience teaches that man can survive on many types of

[1] Hazel K. Stiebeling is Senior Food Economist, Economics Division, Bureau of Home Economics.

diet and that he is fitted to be omnivorous—an eater of both plant and animal foods. At times he may have fared as a vegetarian: "Every herb yielding seed and every tree in which is the fruit of a tree yielding seed, to you it shall be for food." At times he may have subsisted on a mixed diet: "Every beast of the earth, every bird of the heavens, all the fishes of the sea, every moving thing that liveth shall be food for you; as the green herb have I given you all."

Choice or selection within the available supply has until recently been governed largely by tradition—the accumulated wisdom of ages of experience. Not all food customs and food taboos had their origin in the desire for social welfare, however. At times they reflected the power of the strong to gratify personal desire for delicacies or choice bits. But there were limits to selfishness. Continuance of family or race depends upon having enough food of suitable kinds to permit reproduction, the successful rearing of the young, and the maintenance of enough strength and vitality to escape accident, to win in conflict, to endure the elements, and to build bodies fairly resistant to disease. Hence diets that were traditional over generations possessed at least survival value.

Some traditional diets are better than others. For example, the superiority of diets of northern India over those in the south and east of that great country has often been noted. McCay (*717*)[2] found the pastoral peoples of northern India to be superior in health and strength to those in other regions. His impressions are said to be in line with reports of British Army officers to their Government as to the fitness of men from different parts of India for military service. McCarrison (*712*, *712a*) compared the response of laboratory animals fed upon diets like the milk-and-vegetable food of the "stalwart resolute races of the North of India" with those given diets representing the food of the "toneless, supine, and poorly developed people" of the south and east. The first-mentioned diet included whole wheat, milk, legumes, vegetables, and some meat; the latter, a large proportion of polished rice, some legumes, vegetables, and fruit, but little or no milk and meat. He found that animals subsisting on the latter diet exhibited a large proportion of the maladies included in the calendar of human ailments, whereas animals on the former diet were remarkably free from ill health. In commenting upon these Indian diets, the Department of Physiology of Rowett Institute (*828*) points out that whereas the diets of the northern Indian peoples are twice as rich in calcium as the diets of the well-to-do Hindu, and eight or nine times as rich as those of the poor Hindu, they still are capable of improvement in this respect.

Differences in the quality of traditional diets are also indicated in reports published by the British Medical Research Council (*877*) on the physique and health of two tribes living in Kenya, Africa—the Masai and the Akikuyu.

The diet of the former consisted to a large extent of milk, meat, and raw blood, and that of the latter, mainly of cereals, roots and fruits, the bulk of the diet being cereals.

Physical measurements showed that the full-grown Masai male is on the average, 5 inches taller and 23 pounds heavier than the full-grown male Kikuyu, and his muscular strength, as determined by the dynamometer, is 50 percent greater.

[2] Italic numbers in parentheses refer to Literature Cited, p. 1075.

Marked differences were found in the incidence of disease in the two tribes, bony deformities, dental caries, and anaemia, pulmonary conditions, and tropical ulcer being much more prevalent amongst the Akikuyu. On the other hand, intestinal stasis and rheumatoid arthritis were more common amongst the Masai.

The chief points of difference reported in chemical composition of the two diets were that the diet of the Masai was relatively high in protein, fat, and calcium, while that of the Akikuyu was high in carbohydrate and low in calcium. Although the authors do not contend that diet is the sole cause of differences in health and physique, they conclude that improvement in these respects might be brought about by increased consumption of green vegetables by both tribes, and of milk by the Akikuyu.

It is generally conceded that compared with those of other countries diets in the United States are generous and that the range in variety of food products is unusually large. Dietaries now in use in the United States combine the many customs and food habits of the various racial and national groups that have helped to make up the population. While American heritage derives chiefly from northern and western Europe, it has been more or less influenced by other groups. The American Indian has contributed much. Immigrants from southern and middle Europe have also left their mark. In the Southwest the influence of Mexico and in the far West that of the Orient are evident.

Improvements in stature and body build among immigrants to the United States have been attributed to the better diets obtainable here. The second generation of Japanese in California (*935*, *1094*) and of Europeans in the larger American cities are of larger stature and better physique than their parents (*697*, *736*). At the same time, American women entering colleges are found to average more than an inch taller than those in the same colleges 30 years ago (*140*, *824*). The average stature of Harvard men has increased about 2 inches in the last 60 years (*140*, *697*).

TRENDS IN DIETARY HABITS IN THE UNITED STATES

Present-day diets in the United States differ markedly from the diets of a few generations ago. These changes are due to a number of factors. Available food supplies have broadened in scope. Methods of cultivation of food crops and of feeding of livestock have improved. New methods and increased facilities for the storage and transportation of food have been developed. Marked changes have been made in the processing and manufacturing of food products. In addition, modern facilities for communication, contact with neighbors having different cultural backgrounds, travel at home and abroad, the printed page, and the radio have all helped to develop an interest in a wide variety of food combinations and flavors. Not only are diverse tastes tolerated, but in modified form they are widely adopted. As a result of these many influences, there have been great changes both in the quantities of different kinds of food consumed and in the nature of the available food products.

Few quantitative data are available to show the magnitude of this change in diet. Its trend and character are shown by studies of family diets made during the last half century. W. O. Atwater, who for so long was in charge of the nutrition investigations of the United States

Department of Agriculture, was a pioneer in dietary studies in this country. Between 1885 and 1905, he and his coworkers accumulated much information regarding the foods eaten by individuals and groups living under many different conditions. Following this work, the next most important dietary investigation probably was that of Sherman and Gillett, who in 1914–15 obtained detailed and accurate information from 92 low-income families, most of whom lived in New York City. Since then many dietary studies have been made, some in one part of the country, some in another, each adding to our knowledge of American food habits. Two of the most extensive investigations so far attempted have been made by the Bureau of Home Economics. One deals with the content, nutritive value, and economy of the food purchased by families of employed wage earners and clerical workers in 43 industrial centers in 8 major geographical regions of the country (*1104*). It was based on dietary records obtained during the period December 1934 to February 1937 by the Bureau of Labor Statistics in connection with their study of income and disbursements of wage-earner families. The other deals with the food consumption of different-sized families living in cities, villages, and on farms in different parts of the country, and classified by income. These data were obtained in connection with the consumer purchases study made by the Bureau of Home Economics and the Bureau of Labor Statistics in cooperation with the National Resources Committee, Central Statistical Board, and Works Progress Administration.

Changing dietary patterns can be quickly seen from the proportion of calories derived from the major groups of food, as shown in table 1. During the period covered by this table families at each of three important levels of food expenditure have put decreasing emphasis on grain products and meats, and a greater emphasis on fats, sugars, fruit, succulent vegetables (other than potatoes and dried legumes), and milk. The proportion of calories from milk, cheese, fruits, and succulent vegetables actually has been doubled in the last 50 years. Larger and more varied market supplies have been made possible not only by increased production but by a highly developed system of food preservation and distribution.

About three-fourths of the calories in family diets prevalent in this country are derived from grain products, meats, refined fats, sugars, and tubers. The nineteenth-century invention of the steel-faced plow and the modern roller-mill process of milling wheat greatly stimulated cereal production. Cereal grains not only serve directly as food for man, but, as feed for animals, they are used to increase the supply of meat and fat. Pork production is concentrated largely in the Corn Belt, and much of the beef is at least finished (fattened) in the Corn Belt, instead of coming to market directly from the western grass ranges, as formerly.

The consumption of sugars and fats is even greater than the figures in table 1 indicate, because the sugar and fat columns do not include the quantities of these foods consumed in the form of commercially made baked goods, or the sugar purchased in canned fruits, confectionery, and beverages. There was an increase in the consumption of confectionery and soft drinks in the decade following the World War. Also to some extent sugar consumption accompanies fruit consump-

tion, just as fat and oil consumption tends to accompany increased use of vegetables.

TABLE 1.—*Trends in village and urban dietary patterns as shown by proportion of calories derived from specified groups of food* [1]

Food expenditure a person a week [2] and period	Proportion [3] of calories derived from—								
	Grain products	Meats,[4] poultry, fish, eggs	All fats [4]	Sugars and sweets	All vegetables and fruit	Milk, cheese	Milk, cheese, fruits, and succulent vegetables	Grain products, meats, poultry, fish, fats other than butter, sugars, potatoes, and dried legumes	Milk, cheese, all vegetables, fruit, butter, and eggs
	Percent	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*	*Percent*
$1.25–$1.87:									
1885–1904	41	22	13	10	9	5	8	84	22
1905–14	42	18	12	9	12	7	10	83	26
1915–24	37	13	15	12	14	9	16	77	30
1925–34	37	12	16	11	13	11	17	78	29
1935 and later	34	12	18	12	13	11	16	77	31
$1.88–$2.49:									
1885–1904	34	25	15	10	10	6	9	81	26
1905–14	40	18	13	10	13	6	11	79	29
1915–24	36	15	15	12	13	9	15	75	32
1925–34	36	12	16	11	15	10	16	78	31
1935 and later	31	13	18	12	15	11	18	74	34
$2.50–$3.12:									
1885–1904	38	24	12	10	10	6	9	83	24
1905–14	35	25	12	10	11	7	11	84	23
1915–24	30	13	18	12	16	11	17	72	38
1925–34	32	15	16	11	15	11	19	73	34
1935 and later	30	15	18	12	14	11	18	73	34

[1] Based on data from family dietary studies, 1885–1937.
[2] Adjusted to 1935 price levels by use of retail food-cost index of the U. S. Bureau of Labor Statistics.
[3] The first 6 groups are mutually exclusive and include all articles of diet. The last 3 groups are not mutually exclusive.
[4] Salt side and bacon are included with fats.

SIGNIFICANCE OF RECENT TRENDS IN FOOD HABITS

In discussing dietary patterns of this country McCollum (*725*) writes:

We have been trying an experiment in human nutrition on a Nation-wide scale, with a dietary which is of a kind which no people in history ever tried to live upon before. There was no way in which the results of such an experiment could have been foretold, for the dietary properties of individual foods were not understood, and the nutritive requirements of the body were essentially only half understood. It is possible, however, after approximately two generations of experience with a diet of the white bread, meat, sugar and potato type, with small, but generally inadequate additions of other foods of kinds which are capable of correcting the defects of the principal components of the food supply, to attribute certain unfortunate effects definitely to an unsatisfactory dietary. All the information available seems to warrant attributing in great measure the high incidence of malnutrition among children of pre-school and school ages, the faulty bone growth, bad teeth and faulty posture, to inadequacies in our national dietary, and to perverted appetite resulting from pampering and the formation of a liking for sweet foods.

Forty to fifty years ago more than 80 percent of the food calories in American diets were derived from the grains, meats, fats other than butter, sugars, potatoes, and mature legumes. The proportion is still well over 70 percent, even though consumption of milk, fruits, and the

succulent vegetables—foods noted for their mineral elements and vitamins—has markedly increased.

During this period also, certain food preferences have developed that affect dietary adequacy. A modern standard of fastidiousness leads many people to prefer the lean-muscle cuts of meat to the organs of animals that race experience had taught primitive peoples to prize highly. The association of goodness with richness in fat has induced many to prefer cream and butter to skim milk, which, while lacking in fat and vitamin A value, is nevertheless as rich as whole milk in protein, in the much-needed calcium, and in many other water-soluble nutrients. Some food-processing practices, such as a high degree of milling of wheat, refining of cane sugar, and bleaching of vegetables, have stripped products of certain nutritive values while enhancing their keeping qualities in storage and increasing whiteness, which appears to have strong psychological appeal because it is associated with purity.

Thus certain trends in dietary practices tend to impoverish rather than enrich diets from the nutritive standpoint. To a greater or less degree these tend to offset the beneficial effect of increased consumption of milk, green-colored vegetables, and fruits. In consequence, diets are still relatively short in calcium and in vitamins A, B, and C.

Milk, green leafy vegetables, and fruits have long been known as "protective foods" because of their ability to compensate for certain of the shortages likely to characterize American diets. To bring current food habits into line with present knowledge Sherman (*1044*) suggests:

(1) Let at least half of the needed food calories be taken in the form of the "protective" foods—milk and its products, fruits, vegetables, and eggs.
(2) Of whatever breadstuffs and other cereal or grain products are eaten, let at least half be in the "whole grain," or "dark," or "unskimmed" forms.

To put this suggestion into practice would constitute a major shift in American food habits. At the present time less than one-third rather than half of the food calories tend to come from milk and its products, fruits, vegetables, and eggs, and less than a fifth rather than half of the breadstuffs are in whole grain or dark forms.

CHANGES IN NATIONAL DIETARY HABITS

Shifts in dietary practices tend to evolve slowly. However, significant changes took place during the period 1915–24. Many factors contributed to this. Among these may be mentioned shifts in relative food prices; Nation-wide propaganda during the World War for wheatless and meatless days to conserve these foods for military purposes; the enactment of prohibition; the dramatic and widely publicized discoveries of the vitamin values of food; and a growing appreciation of the significance of food to health. While it takes effort to change long-established food habits, under the impetus of a deep urge people will modify them if they can afford it. Because people like the foods to which they are accustomed and a taste for new or strange flavors or new food combinations must usually be cultivated, they will seldom take the trouble required to make a change unless there is a strong motive.

Chief among current motives for changing dietary habits are fashion

and health. In food as in clothing there is a tendency to copy the styles set by the accepted leaders in social groups. Such styles may or may not be in accord with present knowledge of dietary requirements and food values.

The health motive for changing diet habits would be strengthened if obvious manifestations of the effect of diet on nutritional well-being followed day-by-day food consumption with dramatic swiftness. One reason that this is not the case arises from the ability of the body to store certain reserves during periods of plenty to be drawn upon in times of dietary poverty. This provision tends to free one from the tyranny of exactly meeting the physiological requirements of the body from day to day. But it tends to foster a treacherous sense of security that whatever regimen seems to have served well enough in the immediate past will continue to do so indefinitely. Also it adds to the difficulty of convincing the layman that the science of nutrition, as Sherman says (*1044*), can offer to a much larger part of the population a longer life, an earlier and longer prime of life, and more buoyant health through the whole life cycle such as only the most fortunate now enjoy.

The last half-century has seen much progress in the science of nutrition—has seen, indeed, the acquisition of practically all of the knowledge we now have. Still more facts are needed, however, before food requirements for the highest physical and mental response can be outlined with certainty. This knowledge can be obtained only through long-continued, painstaking, and properly planned research. Yet enough has already been accomplished to convince many groups among the general public of the importance of food to well-being, and to enable scientists to mark out the broad lines of advance in applying the findings. Widespread improvement in nutrition would result if present knowledge, incomplete and far from precise though it is, were widely disseminated and put into common practice.

The discrepancy between current popular diets and the type of diet that our present knowledge of foods and nutrition would recommend seems to be due to several factors. Chief among these are food habits, some old, some comparatively new; a too general lack of appreciation of the importance of an adequate diet; and inadequate knowledge of food needs and food values in relation to cost. Equally important is the lack of purchasing power on the part of many urban families, and, especially in the case of rural families, insufficient success in planning and carrying out a food-production program designed to complement food purchases.